CLAIMS

We claim:

1. An automotive vehicle drive unit assembly comprising:

a first driving axle shaft;

a second driving axle shaft, said first and second driving axle shafts being co-linear and defining an axis of rotation;

a first wheel hub driven by said first driving axle shaft;

a second wheel hub driven by said second driving axle shaft, said first and second wheel hubs driven about said axis of rotation;

a first gear set for driving said first wheel hub;

a second gear set for driving said second wheel hub;

said assembly characterized by a first electric motor mounted at a non-parallel angle relative to said axis of rotation of said first driving axle shaft for driving said first gear set, and a second electric motor mounted at a non-parallel angle relative to said axis of rotation of said second driving axle shaft for driving said second gear set.

2. An assembly as set forth in Claim 1 including a third electric motor in parallel driving relationship with said first electric motor to drive said first gear set, and a fourth electric motor in parallel driving relationship with said second electric motor to drive said second gear set.

3. An assembly as set forth in Claim 2 wherein said first and said third electric motors extend radially from said first gear set, and said second and said fourth electric motors extend radially from said second gear set.

4. An assembly as set forth in Claim 1 wherein a first and a second gear box houses said first and second gear sets and are rigidly connected to said first and second electric motors.

5. An assembly as set forth in Claim 4 wherein said first gearbox is fixed relative to said first wheel hub, and said second gearbox is fixed relative to said second wheel hub.

6. An assembly as set forth in Claim 5 wherein said first and second gear sets include a beveled pinion gear and a beveled ring gear.

7. An assembly as set forth in Claim 1, wherein said first electric motor is mounted on said first gear box, and said second electric motor is mounted on said second gearbox.

8. An assembly as set forth in Claim 1, wherein said planetary gear sets are driven by said first and second gear sets resulting in gear reduction.

9. An assembly as set forth in Claim 8, wherein said planetary gear sets are incorporated into said wheel hubs.

10. An assembly as recited in Claim 8, wherein said planetary gear sets are incorporated into said gearboxes.

11. An assembly as set forth in Claim 1 wherein said non-parallel angle is a 90 degree angle.

12. An assembly as set forth in Claim 11 wherein said first and second gear sets include a bevel pinion gear and a bevel ring gear.

13. An assembly as set forth in Claim 11 wherein said first and second motors are mounted at a 90 degree angle extending generally vertically upwardly from said axis of said first and second wheel hubs.

14. An assembly as recited in Claim 12 wherein said first and second motors are mounted an at axis extending generally horizontally relative to said axis of said first and second wheel hubs.

15. An assembly as recited in Claim 14, wherein one of said electric motors is mounted at a 90 degree angle extending generally horizontally and forwardly relative to said axis of said first wheel hub and the other said electric motor is mounted at a 90 degree angle extending generally horizontally and rearwardly relative to said axis of said second wheel hub.

16. A drive unit assembly for a vehicle comprising:

a first driving axle shaft;

a second driving axle shaft, said first and second driving axle shafts being co-linear and defining an axis of rotation;

a first wheel hub to be driven by said first driving axle shaft;

a second wheel hub driven by said second driving axle shaft, said first and second wheel hubs driven about said axis of rotation;

a first gear set for driving said first wheel hub, said first gear set including a bevel pinion gear and a bevel ring gear, with one of said bevel pinion and said bevel ring gear operatively connected to drive said first wheel hub;

a second gear set for driving said second wheel hub, said second gear set including a bevel pinion gear and a bevel ring gear with one of said bevel pinion and said bevel ring gear being operatively connected to drive said second wheel hub; and

a first electric motor mounted at an angle relative to said axis of rotation of said first driving axle shaft for driving the other of said bevel pinion gear and said bevel ring gear of said first gear set, and a second electric motor mounted at an angle relative to said axis of rotation of said second driving axle shaft, and operatively connected to drive the other of said bevel pinon gear and said ring gear.

17. A drive as recited in Claim 16, wherein a third electric motor is mounted in parallel driving relationship with said first electric motor to assist in driving said first gear set, and a fourth electric motor is mounted in parallel driving relationship with said second electric motor to assist in driving said second gear set.

18. A drive as recited in Claim 16, wherein said first and second motors are mounted at a 90 degree angle extending generally vertically upwardly from said axis of said first and second wheel hubs.

19. A drive as recited in Claim 16, wherein said first and second motors are mounted at an axis extending generally horizontally relative to said axis of said first and second wheel hubs.

20. A vehicle comprising:

a vehicle body extending between lateral sides, passenger seats being mounted adjacent each of said lateral sides, a floor defined beneath said passenger seats, an aisle defined between said passenger seats, and said floor also extending beneath said aisle

at least one driving axle for driving a pair of laterally spaced wheels including a first drive axle shaft associated with the first of said wheels, and a second drive axle shaft associated with the second of said wheels;

a first and second gear set for driving said first and second wheels, said first and second gear set each including a bevel pinion gear and a bevel ring gear, with one of said bevel pinion gear and said bevel ring gear operatively connected to drive each of said first and second wheels;

a first electric motor mounted at a non-parallel angle relative to said axis of rotation of said first driving axle for driving the other of said pinion gear and said ring gear of said first gear set, and a second electric motor mounted at a non-parallel angle relative to said axis of rotation of said second driving axle and operatively connected to drive the other of said bevel pinion gear and said ring set; and

said electric motors being mounted at a vertical position which is higher than a vertical position of the floor of said aisle.

21. A vehicle as recited in Claim 20, wherein bevel pinion gears and bevel ring gears are utilized to transmit rotation from said first and second electric motors to said first and second wheels.

22. A vehicle as recited in Claim 20, wherein said non-parallel angle is a perpendicular angle.